

SEQUENCE LISTING

<110> Wood, Keith V.
Gruber, Monika G.
Zhuang, Yao

<120> SYNTHETIC NUCLEIC ACID MOLECULE
COMPOSITIONS AND METHODS OF PREPARATION

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<211> 1626

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

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<220>
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<210> 12

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<212> DNA

<213> Artificial Sequence

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<223> Sequence of a synthetic luciferase

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<210> 14
<211> 1626
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence of a synthetic luciferase

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<210> 15

<211> 1626

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 15

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gatccacgct acggcactca gctgattcct ggtgtcaccg tcttgggtcta cttgcctttc 720
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gaacgtgtga gccatactaa gtacttgctg ggcggcgtgc gttttgttga ctccatccct 1560
cgtaacgtaa caggcaaaat taccgcgaag gagctgttga aacaattgtt ggagaaggcc 1620
ggcggt 1626

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<210> 16
 <211> 1626
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 16
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 ttggctcgatg tggctggcga tgaatctttg agctacaagg agttttttga ggcaaccgtc 180
 ttgctggctc agtccctcca caattgtggc tacaagatga acgacgtcgt tagtatctgt 240
 gctgaaaaca ataccggttt cttcattcca gtcacgccg catggtatat cggatatgatc 300
 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatatctct 360
 aagccacaga ttgtcttcac cactaagaat attctgaaca aagtcctgga agtccaaagc 420
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaaa ctttaaacca 540
 ctccacttcg accctgtgga acaagttgca gccattctgt gtagcagcgg tactactgga 600
 ctcccaaagg gagtcatgca gacccatcaa aacatttgcg tgcgtctgat ccatgctctc 660
 gatccacgct acggcaactca gctgattcct ggtgtcaccg tcttgggtcta cttgcctttc 720
 ttccatgctt tcggcttttca tattactttg gggtacttta tggctcggctc ccgctgatt 780
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 aacgttgaag ctaccaagga ggccatcgac gacgacggct ggttgcatte tgggtatttt 1260
 ggatattacg acgaagatga gcattttttac gtcgtggatc gttacaagga gctgatcaaa 1320
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 gaacgtgtga gccatactaa gtacttgctg ggcggcgtgc gttttgttga ctccatccct 1560
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 ggcggt 1626

<210> 17
 <211> 1626
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 17
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 ttggctcgatg tggctggcga tgaatctttg agctacaagg agttttttga ggcaaccgtc 180
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 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatatctct 360
 aagccacaga ttgtcttcac cactaagaat attctgaaca aagtcctgga agtccaaagc 420
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaaa ctttaaacca 540
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 ctcccaaagg gagtcatgca gacccatcaa aacatttgcg tgcgtctgat ccatgctctc 660

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gaacgtgtga	gccatactaa	gtacttgctg	ggcggcgtgc	gttttggtga	ctccatccct	1560
cgtaacgtaa	caggcaaaaat	taccgcgaag	gagctgttga	aacaattggt	ggagaaggcc	1620
ggcgggt						1626

<210> 18
 <211> 1626
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 18						
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cgcaccaact	ttattaagcg	tatcatcatc	ttggacactg	tggagaatat	tcacggttgc	480
gaatctttgc	ctaatttcat	ctctcgctat	tcagacggca	acatcgcaaa	ctttaacca	540
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gaacgtgtga	gccatactaa	gtacttgctg	ggcggcgtgc	gttttggtga	ctccatccct	1560
cgtaacgtaa	caggcaaaaat	taccgcgaag	gagctgttga	aacaattggt	ggtgaaggcc	1620
ggcgggt						1626

<210> 19
 <211> 933

<212> DNA
<213> Renilla reniformis

<400> 19
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aaacatgcag aaaatgctgt tattttttta catggtaacg cggcctcttc ttatttatgg 180
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gaagatattg cgttgatcaa atctgaagaa ggagaaaaaa tggtttttga gaataacttc 540
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<210> 20
<211> 933
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence of a synthetic luciferase

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agcttcgttg agcgcgctgt gaagaacgag cag 933

<210> 21
<211> 933
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequence of a synthetic luciferase

<400> 21
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<210> 22
<211> 933
<212> DNA
<213> Artificial Sequence

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<220>
<223> Sequence of a synthetic luciferase

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<400> 22
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<210> 23
<211> 543
<212> PRT
<213> Pyrophorus plagiophthalmus

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<400> 23
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Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Phe Gly Asp Glu
35           40           45
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Cys Leu Leu Ala Gln
50           55           60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
65           70           75           80
Ala Glu Asn Asn Lys Arg Phe Phe Ile Pro Ile Ile Ala Ala Trp Tyr

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His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Ala		
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			225					230					235				
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Asn	Leu	Gly	Tyr	Phe	Met	Val	Gly		
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			275					280					285				
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			325					330					335				
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Gly	Asp		
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Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala		
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Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val		
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Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr		
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<210> 24
 <211> 542
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of clone YG#81-6G01

<400> 24

Met	Met	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His
1				5					10					15	
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg
			20					25					30		
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
		35					40					45			
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
	50					55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115						120					125		
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
		130					135					140			
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145						150				155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185						190	
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200						205		
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Ala
		210				215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
			245						250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
		260						265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
			325						330					335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Arg	Asp
		340						345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn

385 390 395 400
 Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His
 405 410 415
 Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val
 420 425 430
 Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro
 435 440 445
 Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val
 450 455 460
 Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala
 465 470 475 480
 Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr
 485 490 495
 Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly
 500 505 510
 Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
 515 520 525
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
 530 535 540

<210> 25
 <211> 542
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> Sequence of a synthetic luciferase

<400> 25
 Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
 1 5 10 15
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
 20 25 30
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
 35 40 45
 Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
 50 55 60
 Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
 65 70 75 80
 Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
 85 90 95
 Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
 100 105 110
 Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
 115 120 125
 Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
 130 135 140
 Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
 145 150 155 160
 Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
 165 170 175
 Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile
 180 185 190
 Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr
 195 200 205
 His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val
 210 215 220
 Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe

225					230					235					240	
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly	
				245					250					255		
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys	
				260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val	
				275					280					285		
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser	
				290					295					300		
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val	
305					310					315					320	
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly	
				325					330					335		
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Arg	Asp	
				340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala	
				355					360					365		
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val	
				370					375					380		
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn	
385					390					395					400	
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His	
				405					410					415		
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val	
				420					425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro	
				435					440					445		
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val	
				450					455					460		
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala	
465					470					475					480	
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr	
				485					490					495		
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly	
				500					505					510		
Val	Arg	Phe	Val	Asp	Ser	Ile	Pro	Arg	Asn	Val	Thr	Gly	Lys	Ile	Thr	
				515					520					525		
Arg	Lys	Glu	Leu	Leu	Lys	Gln	Leu	Leu	Glu	Lys	Ala	Gly	Gly			
				530					535					540		

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<210> 26
<211> 542
<212> PRT
<213> Artificial Sequence
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<400> 26															
Met	Met	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His
1				5					10					15	
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg
			20					25					30		
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
		35					40					45			
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
	50					55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys

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65		70		75		80									
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
			85						90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
		130				135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155				160	
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170				175		
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185				190			
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Val
		210				215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235				240	
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
			245					250					255		
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
		260						265				270			
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275				280						285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
		290				295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315				320	
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
			325					330					335		
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Arg	Asp
		340						345				350			
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360				365				
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
		370				375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395				400	
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
			405					410					415		
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
		420						425				430			
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
		450				455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475				480	
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
			485					490					495		
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505				510			
Val	Arg	Phe	Val	Asp	Ser	Ile	Pro	Arg	Asn	Val	Thr	Gly	Lys	Ile	Thr
		515					520					525			
Arg	Lys	Glu	Leu	Leu	Lys	Gln	Leu	Leu	Glu	Lys	Ala	Gly	Gly		

530

535

540

<210> 27

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 27

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Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
 1          5          10          15
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
          20          25          30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
          35          40          45
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
          50          55          60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
65          70          75          80
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
          85          90          95
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
          100          105          110
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
          115          120          125
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
          130          135          140
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
145          150          155          160
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
          165          170          175
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile
          180          185          190
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr
          195          200          205
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val
          210          215          220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe
225          230          235          240
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly
          245          250          255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys
          260          265          270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val
          275          280          285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser
          290          295          300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val
305          310          315          320
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly
          325          330          335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp
          340          345          350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala
          355          360          365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val

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370		375		380
Gly Glu Leu Cys Ile Lys	Gly Pro Met Val Ser Lys Gly Tyr Val Asn			
385		390		400
Asn Val Glu Ala Thr Lys	Glu Ala Ile Asp Asp Asp Gly Trp Leu His			
	405		410	415
Ser Gly Asp Phe Gly Tyr Tyr Asp	Glu Asp Glu His Phe Tyr Val Val			
	420		425	430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro				
	435		440	445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val				
	450		455	460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala				
465		470		475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr				
	485		490	495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly				
	500		505	510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr				
	515		520	525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly				
	530		535	540

<210> 28

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 28

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His				
1	5	10	15	
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg				
	20	25	30	
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu				
	35	40	45	
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln				
	50	55	60	
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys				
65	70	75	80	
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr				
	85	90	95	
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu				
	100	105	110	
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr				
	115	120	125	
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe				
	130	135	140	
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys				
145	150	155	160	
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala				
	165	170	175	
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile				
	180	185	190	
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr				
	195	200	205	
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val				

210	215	220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		
225	230	235
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly		240
	245	250
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		255
	260	265
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		270
	275	280
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		285
	290	295
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		300
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		320
	325	330
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp		335
	340	345
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		350
	355	360
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		365
	370	375
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		380
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		400
	405	410
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		415
	420	425
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		430
	435	440
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		445
	450	455
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		460
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		480
	485	490
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		495
	500	505
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		510
	515	520
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly		525
	530	535
		540

<210> 29

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 29

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His		
1	5	10
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg		15
	20	25
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu		30
	35	40
Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln		45

50	55	60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys		
65	70	75
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr		80
	85	90
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu		95
	100	105
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr		110
	115	120
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe		125
	130	135
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys		140
145	150	155
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala		160
	165	170
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile		175
	180	185
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr		190
	195	200
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val		205
	210	215
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		220
225	230	235
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly		240
	245	250
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		255
	260	265
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		270
	275	280
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		285
	290	295
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		300
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		320
	325	330
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp		335
	340	345
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		350
	355	360
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		365
	370	375
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		380
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		400
	405	410
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		415
	420	425
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		430
	435	440
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		445
	450	455
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		460
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		480
	485	490
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		495
	500	505
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		510

004280-90254960

515 520 525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
530 535 540

<210> 30
<211> 542
<212> PRT
<213> Artificial Sequence

<220>
<223> Sequence of a synthetic luciferase

<400> 30
Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
1 5 10 15
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
20 25 30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
35 40 45
Asn Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
50 55 60
Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
65 70 75 80
Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
85 90 95
Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
100 105 110
Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
115 120 125
Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
130 135 140
Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
145 150 155 160
Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
165 170 175
Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile
180 185 190
Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr
195 200 205
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Val
210 215 220
Gly Thr Gln Leu Ile Ser Gly Val Thr Val Leu Val Tyr Leu Pro Phe
225 230 235 240
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly
245 250 255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys
260 265 270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val
275 280 285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser
290 295 300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val
305 310 315 320
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly
325 330 335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp
340 345 350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala

355 360 365
 Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val
 370 375 380
 Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn
 385 390 395 400
 Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His
 405 410 415
 Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val
 420 425 430
 Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro
 435 440 445
 Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val
 450 455 460
 Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala
 465 470 475 480
 Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr
 485 490 495
 Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly
 500 505 510
 Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
 515 520 525
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
 530 535 540

<210> 31

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 31

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
 1 5 10 15
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
 20 25 30
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
 35 40 45
 Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
 50 55 60
 Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
 65 70 75 80
 Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
 85 90 95
 Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
 100 105 110
 Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
 115 120 125
 Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
 130 135 140
 Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
 145 150 155 160
 Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
 165 170 175
 Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile
 180 185 190
 Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr

195	200	205
His Gln Asn Ile Cys Val Arg	Leu Ile His Ala Leu Asp Pro Arg Val	
210	215	220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val	Leu Val Tyr Leu Pro Phe	
225	230	235
Phe His Ala Phe Gly Phe Ser Ile Thr Leu Gly Tyr Phe Met Val Gly		240
245	250	255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		
260	265	270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		
275	280	285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		
290	295	300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		320
325	330	335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Asn Ile His Ser Leu Arg Asp		
340	345	350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		
355	360	365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		
370	375	380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		
405	410	415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		
420	425	430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		
435	440	445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		
450	455	460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		
485	490	495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		
500	505	510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		
515	520	525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly		
530	535	540

<210> 32

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 32

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His	
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Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg	
20	25
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu	
	30

		35					40					45				
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln	
	50					55					60					
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys	
65					70					75					80	
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr	
				85					90					95		
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu	
			100					105					110			
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr	
		115					120					125				
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe	
	130					135					140					
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys	
145					150					155					160	
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala	
				165					170					175		
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile	
			180					185					190			
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr	
		195					200					205				
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr	
	210					215					220					
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe	
225					230					235					240	
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly	
				245					250					255		
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys	
			260					265					270			
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val	
		275					280					285				
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser	
	290					295					300					
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val	
305					310					315					320	
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly	
				325					330					335		
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp	
			340					345					350			
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala	
		355					360					365				
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val	
	370					375					380					
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn	
385					390					395					4	

00645706.082400

			500					505					510				
Val	Arg	Phe	Val	Asp	Ser	Ile	Pro	Arg	Asn	Val	Thr	Gly	Lys	Ile	Thr		
		515					520					525					
Arg	Lys	Glu	Leu	Leu	Lys	Gln	Leu	Leu	Glu	Lys	Ala	Gly	Gly				
		530				535					540						

<210> 33
 <211> 542
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 33

Met	Met	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His		
1				5				10						15			
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg		
			20					25					30				
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu		
		35				40					45						
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln		
	50					55					60						
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys		
65				70					75					80			
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr		
			85					90						95			
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu		
		100						105					110				
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr		
	115							120				125					
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe		
	130					135					140						
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys		
145					150					155				160			
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala		
			165					170					175				
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile		
		180						185					190				
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr		
	195						200					205					
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr		
	210					215				220							
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe		
225					230					235				240			
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly		
			245					250					255				
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys		
		260						265					270				
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val		
	275						280					285					
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser		
	290					295					300						
Ser	Leu	Arg	Glu	Leu	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val			
305					310					315				320			
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly		
			325					330					335				
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp		

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<220>
<223> Sequence of a synthetic luciferase

29

004290" 90754960

<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 36
cttaattctc cccatcccc tgttgacaat taatcatcgg ctcg

44

<210> 37
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 37
tataatgtga ggaattgcga gcggataaca atttcacaca

40

<210> 38
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 38
atgggatgtt acctagacca atatgaaata tttggtaa

40

<210> 39
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 39
aaatgcttaa tgaatttcaa aaaaaaaaaa aaaggaattc

40

<210> 40
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 40
gatatcaagc ttatcgatac cgtcgacctc gaggattata

40

<210> 41
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 41
 tagaaaaagg cctcggcggc cgctagttca gtcagtt 37

<210> 42
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 42
 aactgactga actagcg 17

<210> 43
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 43
 gccgccgagg cctttttcta tataatcctc gaggtcgacg 40

<210> 44
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 44
 gtatcgataa gcttgatata gaattccttt tttttttttt 40

<210> 45
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 45
 agcttgatat cgaattcctt tttttttttt tttgaaattc 40

<210> 46
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 46
 ttgaaattca ttaagcattt atttaccaaa tatttcatat 40

 <210> 47
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 47
 tgggtctaggt aacatcccat cactagcttt tttttctata 40

 <210> 48
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 48
 tcgcaattcc tcacattata cgagccgatg attaatgtgc 40

 <210> 49
 <211> 53
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 49
 aacaggggga tggggagaat taaggccact caggcctaag cttgggctgg cgt 53

 <210> 50
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 50
 ggaaacagga tcccatgatg aaacgcgaaa agaacgtgat 40

 <210> 51
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <400> 51
 ctacggccca gaaccactgc atccactgga agacctcacc 40

<210> 52
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <400> 52
 gctggtgaga tgctcttccg agcactgcgt aaacatagtc 40

 <210> 53
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <400> 53
 acctccctca agcactcgtg gacgtcgtgg gagacgagag 40

 <210> 54
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <400> 54
 cctctcctac aaagaatttt tcgaagctac tgtgctgttg 40

 <210> 55
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
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 <400> 55
 gcccaaagcc tccataattg tgggtacaaa atgaacgatg 40

 <210> 56
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 56
 tggtagcat ttgtgctgag aataacactc gcttctttat 40

 <210> 57
 <211> 40
 <212> DNA

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<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 57

tcctgtaatc gctgcttggt acatcgcat gattgtcgcc

40

<210> 58

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 58

cctgtgaatg aatcttacat cccagatgag ctgtgtaagg

40

<210> 59

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 59

ttatgggtat tagcaaact caaatcgtct ttactacaa

40

<210> 60

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 60

aaacatcttg aataaggtct tggaagtcca gtctcgact

40

<210> 61

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 61

aacttcacat aacgcacat tattctggat accgtcgaaa

40

<210> 62

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

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<223> An oligonucleotide

<400> 62
acatccacgg ctgtgagagc ctccctaact tcattctctcg 40

<210> 63
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 63
ttacagcgat ggtaatatcg ctaatttcaa gcccttgcat 40

<210> 64
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 64
tttgatccag tcgagcaagt ggccgctatt ttgtgctcct 40

<210> 65
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 65
ccggcaccac tggtttgcct aaaggtgtca tgcagactca 40

<210> 66
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 66
ccagaatatc tgtgtgcggt tgatccacgc tctcgaccct 40

<210> 67
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 67

cgtgtgggta ctcaattgat ccctggcgtg actgtgctgg 40
 <210> 68
 <211> 40
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> An oligonucleotide
 <400> 68
 tgtatctgcc tttctttcac gcctttggtt tctctattac 40
 <210> 69
 <211> 40
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> An oligonucleotide
 <400> 69
 cctgggctat ttcattggtc gcttgctgt catcatgttt 40
 <210> 70
 <211> 40
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> An oligonucleotide
 <400> 70
 cgtcgcttcg accaagaagc cttcttgaag gctattcaag 40
 <210> 71
 <211> 40
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> An oligonucleotide
 <400> 71
 actacgaggt gcgttcctg atcaacgtcc cttcagtcac 40
 <210> 72
 <211> 43
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> An oligonucleotide
 <400> 72
 tttgttcctg agcaaattct ctttggttga caagtatgat ctg 43
 <210> 73

<211> 37
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 73
 agcagcttgc gtgagctgtg ctgtggcgct gtcctt 37

 <210> 74
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 74
 tggccaaaga agtggccgag gtcgctgcta agcgtctgaa 40

 <210> 75
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 75
 cctccctggt atccgctgcg gttttggttt gactgagagc 40

 <210> 76
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 76
 acttctgcta acatccatag cttgcgagac gagtttaagt 40

 <210> 77
 <211> 40
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> An oligonucleotide

 <400> 77
 ctggtagcct gggtcgcgtg actcctctta tggctgcaaa 40

 <210> 78
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 78
 gatcgccgac cgtgagaccg gcaaagcact gggcccaaat 40

<210> 79
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 79
 caagtcggtg aattgtgtat taagggccct atggtctcta 40

<210> 80
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 80
 aaggctacgt gaacaatgtg gaggccacta aagaagccat 40

<210> 81
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 81
 tgatgatgat ggctggctcc atagcggcga cttcggttac 40

<210> 82
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 82
 tatgatgagg acgaacactt ctatgtggtc gatcgctaca 40

<210> 83
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 83
 aagaattgat taagtacaaa ggctctcaag tcgcaccagc 40

 <210> 84
 <211> 40
 <212> DNA
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<220>
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<400> 202
 tgggagtcca gtagtaccgc tgctacacag aatggctgca 40

<210> 203
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 203
 acttgttcca cagggtcgaa gtggagtggg ttaaagtttg 40

<210> 204
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 204
 cgatgttgcc gtctgaatag cgagagatga aattaggcaa 40

<210> 205
 <211> 40
 <212> DNA

004280"90254960

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 205

agattcgcaa ccgtgaatat tctccacagt gtccaagatg

40

<210> 206

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 206

atgatacgct taataaagtt ggtgcggctt tggacttcca

40

<210> 207

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 207

ggactttggt cagaatattc ttagtggtga agacaatctg

40

<210> 208

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 208

tggcttagag atacccatga ctttacacag ttcgtcggga

40

<210> 209

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 209

atgtagctct cggtgactgg agccacgatc ataccgatat

40

<210> 210

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 210
accatgcggc gatgactgga atgaagaaac gggatttggt 40

<210> 211
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 211
ttcagcacag atactaacga cgtcgttcat cttgtagcca 40

<210> 212
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 212
caattgtgga gggactgagc cagcaagacg gttgcctcaa 40

<210> 213
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 213
aaaactcctt gtagctcaaa gattcatcgc cgaccacatc 40

<210> 214
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 214
gaccaaggct tgaggcaaat gagagtgctt gcggagagca 40

<210> 215
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 215

cgaaacagca tttcgccggc agtcaaattcc tccaaaggat

40

<210> 216

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 216

ggagaggctc agggccatag atgacatttt tctcacgctt

40

<210> 217

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 217

catcatggga tctgttttcc tgtgtgaaat tggtatccgc

40

<210> 218

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 218

Met	Met	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His
1				5				10						15	
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg
			20					25					30		
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
			35				40					45			
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
			50			55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
			115					120					125		
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
			130				135					140			
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr

004280" 90254960

195	200	205
His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Tyr		
210	215	220
Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe		
225	230	235
Phe His Ala Phe Gly Phe His Ile Thr Leu Gly Tyr Phe Met Val Gly		
245	250	255
Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys		
260	265	270
Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val		
275	280	285
Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser		
290	295	300
Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val		
305	310	315
Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly		
325	330	335
Phe Gly Leu Thr Glu Ser Thr Ser Ala Ile Ile Gln Ser Leu Arg Asp		
340	345	350
Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala		
355	360	365
Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val		
370	375	380
Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn		
385	390	395
Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His		
405	410	415
Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val		
420	425	430
Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro		
435	440	445
Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val		
450	455	460
Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala		
465	470	475
Phe Val Val Lys Gln Pro Gly Lys Glu Ile Thr Ala Lys Glu Val Tyr		
485	490	495
Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly		
500	505	510
Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr		
515	520	525
Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly		
530	535	540

<210> 219

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 219

Met Met Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His		
1	5	10
Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg		
20	25	30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu		

	35						40						45					
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln			
50						55					60							
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys			
65					70					75					80			
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr			
				85					90					95				
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu			
			100					105				110						
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr			
		115					120					125						
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe			
	130					135					140							
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys			
145					150					155					160			
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala			
				165					170					175				
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile			
			180					185					190					
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr			
		195					200					205						
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr			
	210					215					220							
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe			
225					230					235					240			
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly			
				245					250					255				
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys			
			260					265					270					
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val			
		275					280					285						
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser			
	290					295					300							
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val			
305					310					315					320			
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly			
				325					330					335				
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp			
			340					345					350					
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala			
		355					360					365						
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val			
	370					375					380							
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn			
385					390					395					400			

			500					505				510					
Val	Arg	Phe	Val	Asp	Ser	Ile	Pro	Arg	Asn	Val	Thr	Gly	Lys	Ile	Thr		
		515					520					525					
Arg	Lys	Glu	Leu	Leu	Lys	Gln	Leu	Leu	Glu	Lys	Ala	Gly	Gly				
		530				535					540						

<210> 220
 <211> 542
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 220

Met	Met	Lys	Arg	Glu	Lys	Asn	Val	Ile	Tyr	Gly	Pro	Glu	Pro	Leu	His		
1				5				10						15			
Pro	Leu	Glu	Asp	Leu	Thr	Ala	Gly	Glu	Met	Leu	Phe	Arg	Ala	Leu	Arg		
			20					25					30				
Lys	His	Ser	Tyr	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu		
		35				40						45					
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln		
	50					55					60						
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys		
65				70					75					80			
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr		
			85					90						95			
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu		
		100						105					110				
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr		
		115						120					125				
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe		
	130					135					140						
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys		
145					150					155				160			
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala		
			165					170					175				
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile		
		180						185					190				
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr		
	195						200					205					
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr		
	210					215					220						
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe		
225					230					235				240			
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly		
			245					250						255			
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys		
		260						265					270				
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val		
	275						280					285					
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser		
	290					295					300						
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val		
305					310					315				320			
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly		
			325					330						335			
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp		

			20					25				30			
Lys	His	Ser	His	Leu	Pro	Gln	Ala	Leu	Val	Asp	Val	Val	Gly	Asp	Glu
		35					40					45			
Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
	50					55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
	130					135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165				170						175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr
	210					215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
				245				250						255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
				325				330						335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Gly	Asp
			340					345						350	
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val

485 490 495
 Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly
 500 505 510
 Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
 515 520 525
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
 530 535 540

<210> 223
 <211> 542
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 223
 Met Ile Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
 1 5 10 15
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
 20 25 30
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
 35 40 45
 Ser Leu Ser Tyr Lys Glu Phe Phe Glu Ala Thr Val Leu Leu Ala Gln
 50 55 60
 Ser Leu His Asn Cys Gly Tyr Lys Met Asn Asp Val Val Ser Ile Cys
 65 70 75 80
 Ala Glu Asn Asn Thr Arg Phe Phe Ile Pro Val Ile Ala Ala Trp Tyr
 85 90 95
 Ile Gly Met Ile Val Ala Pro Val Asn Glu Ser Tyr Ile Pro Asp Glu
 100 105 110
 Leu Cys Lys Val Met Gly Ile Ser Lys Pro Gln Ile Val Phe Thr Thr
 115 120 125
 Lys Asn Ile Leu Asn Lys Val Leu Glu Val Gln Ser Arg Thr Asn Phe
 130 135 140
 Ile Lys Arg Ile Ile Ile Leu Asp Thr Val Glu Asn Ile His Gly Cys
 145 150 155 160
 Glu Ser Leu Pro Asn Phe Ile Ser Arg Tyr Ser Asp Gly Asn Ile Ala
 165 170 175
 Asn Phe Lys Pro Leu His Phe Asp Pro Val Glu Gln Val Ala Ala Ile
 180 185 190
 Leu Cys Ser Ser Gly Thr Thr Gly Leu Pro Lys Gly Val Met Gln Thr
 195 200 205
 His Gln Asn Ile Cys Val Arg Leu Ile His Ala Leu Asp Pro Arg Tyr
 210 215 220
 Gly Thr Gln Leu Ile Pro Gly Val Thr Val Leu Val Tyr Leu Pro Phe
 225 230 235 240
 Phe His Ala Phe Gly Phe His Ile Thr Leu Gly Tyr Phe Met Val Gly
 245 250 255
 Leu Arg Val Ile Met Phe Arg Arg Phe Asp Gln Glu Ala Phe Leu Lys
 260 265 270
 Ala Ile Gln Asp Tyr Glu Val Arg Ser Val Ile Asn Val Pro Ser Val
 275 280 285
 Ile Leu Phe Leu Ser Lys Ser Pro Leu Val Asp Lys Tyr Asp Leu Ser
 290 295 300
 Ser Leu Arg Glu Leu Cys Cys Gly Ala Ala Pro Leu Ala Lys Glu Val
 305 310 315 320
 Ala Glu Val Ala Ala Lys Arg Leu Asn Leu Pro Gly Ile Arg Cys Gly

004280" 9074960

325 330 335
 Phe Gly Leu Thr Glu Ser Thr Ser Ala Ile Ile Gln Thr Leu Gly Asp
 340 345 350
 Glu Phe Lys Ser Gly Ser Leu Gly Arg Val Thr Pro Leu Met Ala Ala
 355 360 365
 Lys Ile Ala Asp Arg Glu Thr Gly Lys Ala Leu Gly Pro Asn Gln Val
 370 375 380
 Gly Glu Leu Cys Ile Lys Gly Pro Met Val Ser Lys Gly Tyr Val Asn
 385 390 395 400
 Asn Val Glu Ala Thr Lys Glu Ala Ile Asp Asp Asp Gly Trp Leu His
 405 410 415
 Ser Gly Asp Phe Gly Tyr Tyr Asp Glu Asp Glu His Phe Tyr Val Val
 420 425 430
 Asp Arg Tyr Lys Glu Leu Ile Lys Tyr Lys Gly Ser Gln Val Ala Pro
 435 440 445
 Ala Glu Leu Glu Glu Ile Leu Leu Lys Asn Pro Cys Ile Arg Asp Val
 450 455 460
 Ala Val Val Gly Ile Pro Asp Leu Glu Ala Gly Glu Leu Pro Ser Ala
 465 470 475 480
 Phe Val Val Lys Gln Pro Gly Thr Glu Ile Thr Ala Lys Glu Val Tyr
 485 490 495
 Asp Tyr Leu Ala Glu Arg Val Ser His Thr Lys Tyr Leu Arg Gly Gly
 500 505 510
 Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
 515 520 525
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Val Lys Ala Gly Gly
 530 535 540

<210> 224

<211> 311

<212> PRT

<213> Renilla reniformis

<400> 224

Met Thr Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr
 1 5 10 15
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser
 20 25 30
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile
 35 40 45
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val
 50 55 60
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly
 65 70 75 80
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp
 85 90 95
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys
 100 105 110
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His
 115 120 125
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu
 130 135 140
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu
 145 150 155 160
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu
 165 170 175
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg
 180 185 190

Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu
 195 200 205
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro
 210 215 220
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr
 225 230 235 240
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu
 245 250 255
 Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys
 260 265 270
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln
 275 280 285
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu
 290 295 300
 Arg Val Leu Lys Asn Glu Gln
 305 310

<210> 225

<211> 311

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 225

Met Ala Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr
 1 5 10 15
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser
 20 25 30
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile
 35 40 45
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val
 50 55 60
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly
 65 70 75 80
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp
 85 90 95
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys
 100 105 110
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His
 115 120 125
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu
 130 135 140
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu
 145 150 155 160
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu
 165 170 175
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg
 180 185 190
 Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu
 195 200 205
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro
 210 215 220
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr
 225 230 235 240
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu
 245 250 255

Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys
 260 265 270
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln
 275 280 285
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu
 290 295 300
 Arg Val Leu Lys Asn Glu Gln
 305 310

<210> 226

<211> 311

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 226

Met Ala Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr
 1 5 10 15
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser
 20 25 30
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile
 35 40 45
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val
 50 55 60
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly
 65 70 75 80
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp
 85 90 95
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys
 100 105 110
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His
 115 120 125
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu
 130 135 140
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu
 145 150 155 160
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu
 165 170 175
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg
 180 185 190
 Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu
 195 200 205
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro
 210 215 220
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr
 225 230 235 240
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu
 245 250 255
 Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys
 260 265 270
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln
 275 280 285
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu
 290 295 300
 Arg Val Leu Lys Asn Glu Gln
 305 310

<210> 227
 <211> 311
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 227
 Met Ala Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg Met Ile Thr
 1 5 10 15
 Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val Leu Asp Ser
 20 25 30
 Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn Ala Val Ile
 35 40 45
 Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg His Val Val
 50 55 60
 Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp Leu Ile Gly
 65 70 75 80
 Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg Leu Leu Asp
 85 90 95
 His Tyr Lys Tyr Leu Thr Ala Trp Phe Glu Leu Leu Asn Leu Pro Lys
 100 105 110
 Lys Ile Ile Phe Val Gly His Asp Trp Gly Ala Cys Leu Ala Phe His
 115 120 125
 Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val His Ala Glu
 130 135 140
 Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro Asp Ile Glu
 145 150 155 160
 Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys Met Val Leu
 165 170 175
 Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys Ile Met Arg
 180 185 190
 Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro Phe Lys Glu
 195 200 205
 Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg Glu Ile Pro
 210 215 220
 Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val Arg Asn Tyr
 225 230 235 240
 Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met Phe Ile Glu
 245 250 255
 Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly Ala Lys Lys
 260 265 270
 Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His Phe Ser Gln
 275 280 285
 Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser Phe Val Glu
 290 295 300
 Arg Val Leu Lys Asn Glu Gln
 305 310

<210> 228
 <211> 14
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A consensus sequence

09645706 "032400

<221> misc_feature
 <222> (1)...(14)
 <223> n = A,T,C or G

<400> 228
 yggmnnnnng ccaa 14

<210> 229
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A primer

<400> 229
 gtactgagac gacgccagcc caagcttagg cctgagtg 38

<210> 230
 <211> 38
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A primer

<400> 230
 ggcatgagcg tgaactgact gaactagcgg ccgccgag 38

<210> 231
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A primer

<400> 231
 ggatcccatg gtgaagcgtg agaa 24

<210> 232
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A primer

<400> 232
 ggatcccatg gtgaaacgcg a 21

<210> 233
 <211> 31
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A primer

<400> 233
ctagcttttt tttctagata atcatgaaga c 31

<210> 234
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> A primer

<400> 234
caaaaagctt ggcattccgg tactgttggg aaagccacca tggagaagcg agag 54

<210> 235
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> A primer

<400> 235
caattgttgt tggtaacttg tttatt 26

<210> 236
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> A primer

<400> 236
aaccatgggt tccaaggtgt acgaccccgga gcaacgcaaa 40

<210> 237
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> A primer

<400> 237
gctctagaat tactgctcgt tcttcagcac gcgctccacg 40

<210> 238
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> A primer

<400> 238
cgctagccat ggcttcgaaa gtttatgatc c 31

<210> 239
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A primer

<400> 239
 ggccagtaac tctagaatta ttggt

25

<210> 240
 <211> 5
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 240
 tataa

5

<210> 241
 <211> 6
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 241
 stratg

6

<210> 242
 <211> 9
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<221> misc_feature
 <222> (1)...(9)
 <223> n = A,T,C or G

<400> 242
 mttncnnma

9

<210> 243
 <211> 5
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 243
 tratg

5

<210> 244
 <211> 7
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A consensus sequence

<400> 244
 tgastma

7

<210> 245
 <211> 14
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> A consensus sequence

<221> misc_feature
 <222> (1)...(14)
 <223> n = A,T,C or G

<400> 245
 yggmnnnnng ccaa

14

<210> 246
 <211> 40
 <212> DNA
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<220>
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<400> 246
 aaccatggct tccaaggtgt acgacccoga gcaacgcaaa

40

<210> 247
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 247
 cgcgatgatca ctgggcctca gtggtgggct cgctgcaagc

40

<210> 248
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 248
 aaatgaacgt gctggactcc ttcatcaact actatgattc

40

<210> 249
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 249
cgagaagcac gccgagaacg ccgtgatttt tctgcatggt aacgctgcct

50

<210> 250
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 250
ccagctacct gtggaggcac gtcgtgcctc acatcgagcc

40

<210> 251
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 251
cgtggctaga tgcacatcc ctgatctgat cggaatgggt

40

<210> 252
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 252
aagtccggca agagcgggaa tggctcatat cgcctcctgg

40

<210> 253
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 253
atcactacaa gtacctcacc gcttggttcg agctgctgaa

40

<210> 254
<211> 40
<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 254

ccttccaaag aaaatcatct ttgtgggcca cgactggggg

40

<210> 255

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 255

gcttgtctgg cctttcacta ctcctacgag caccaagaca

40

<210> 256

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 256

agatcaaggc catcgtccat gctgagagtg tcgtggacgt

40

<210> 257

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 257

gatcgagtcc tgggacgagt ggcctgacat cgaggaggat atcgc

45

<210> 258

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 258

cctgatcaag agcgaagagg gcgagaaaat ggtgcttgag

40

<210> 259

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 259

aataacttct tcgtcgagac catgctccca agcaagatca

40

<210> 260

<211> 45

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 260

tgcggaact ggagcctgag gagttcgctg cctacctgga gccat

45

<210> 261

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 261

tcaaggagaa gggcgagggt agacggccta ccctctcctg

40

<210> 262

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 262

gcctcgcgag atccctctcg ttaagggagg caagcccgac

40

<210> 263

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 263

gtcgtccaga ttgtccgcaa ctacaacgcc taccttcggg

40

<210> 264

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 264

ccagcgacga tctgcctaag atgttcacgc agtccgaccc

40

<210> 265

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 265

tgggttcttt tccaacgcta ttgtcgaggg agctaagaag

40

<210> 266

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 266

ttccctaaca ccgagttcgt gaaggagaag ggcctccact

40

<210> 267

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 267

tcagccagga ggacgctcca gatgaaatgg gtaagtacat

40

<210> 268

<211> 49

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 268

caagagcttc gtggagcgcg tgctgaagaa cgagcagtaa ttctagagc

49

<210> 269

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 269

gctctagaat tactgctcgt tcttcagca

29

<210> 270

<211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 270
 cgcgctccac gaagctcttg atgtacttac ccatttcac

40

<210> 271
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 271
 tggagcgcc tcctggctga agtggaggcc cttcaccttc

40

<210> 272
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 272
 acgaactcgg tgtagggaa cttcttagct ccctcgacaa

40

<210> 273
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 273
 tagcggttga aaagaacca gggtcggact cgatgaacat

40

<210> 274
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 274
 cttaggcaga tcgtcgctgg cccgaaggta ggcgttgtag

40

<210> 275
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide
 <400> 275
 ttgcggacaa tctggacgac gtcgggcttg cctcccttaa

40

<210> 276
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide
 <400> 276
 cgagagggat ctcgagaggc caggagagg taggccgtct

40

<210> 277
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide
 <400> 277
 aacctcgccc ttctccttga atggctccag gtaggcagcg

40

<210> 278
 <211> 45
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide
 <400> 278
 aactcctcag gctccagttt ccgcatgac ttgcttggga gcatg

45

<210> 279
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 <213> Artificial Sequence

<220>
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 <400> 279
 gtctcgacga agaagttatt ctcaagcacc attttctcgc

40

<210> 280
 <211> 40
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> An oligonucleotide

<400> 280
cctcttcgct cttgatcagg gcgatatcct cctcgatgtc 40

<210> 281
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<220>
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<400> 281
aggccactcg tcccaggact cgatcacgtc cacgacactc tca 43

<210> 282
<211> 42
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<400> 282
gcatggacga tggccttgat cttgtcttgg tgctcgtagg ag 42

<210> 283
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<220>
<223> An oligonucleotide

<400> 283
tagtgaaagg ccagacaagc cccccagtcg tggcccacaa 40

<210> 284
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 284
agatgatttt ctttgaagg ttcagcagct cgaaccaagc 40

<210> 285
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<220>
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<400> 285
ggtgaggtagc ttgtagtgat ccaggaggcg atatgagcca 40

<210> 286
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 286
ttcccgcgtct tgccggactt acccattccg atcagatcag

40

<210> 287
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 287
ggatgatgca tctagccacg ggctcgatgt gaggcacgac gtgcc

45

<210> 288
<211> 40
<212> DNA
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<220>
<223> An oligonucleotide

<400> 288
tccacaggta gctggaggca gcgttaccat gcagaaaaat

40

<210> 289
<211> 45
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 289
cacggcgcttc tcggcgtgct tctcggaatc atagtagttg atgaa

45

<210> 290
<211> 40
<212> DNA
<213> Artificial Sequence

<220>
<223> An oligonucleotide

<400> 290
ggagtccagc acgttcattt gcttcgagcg agcccaccac

40

<210> 291
<211> 40
<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 291

tgaggccag tgatcatgcg tttgcgttgc tcggggtcgt

40

<210> 292

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 292

acaccttgga agccatggtt

20

<210> 293

<211> 10

<212> DNA

<213> Artificial Sequence

<220>

<223> A Kozak sequence

<400> 293

aaccatggct

10

<210> 294

<211> 12

<212> DNA

<213> Artificial Sequence

<220>

<223> An oligonucleotide

<400> 294

taattctaga gc

12

<210> 295

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> A primer

<400> 295

gcgtagccat ggtaaagcgt gagaaaaatg tc

32

<210> 296

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> A primer

<400> 296

ccgactctag attactaacc gccggccttc acc

33

<210> 297

<211> 1626

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 297

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ctcaccgctg gtgagatgct cttccgagca ctgcgtaaac atagtcacct ccctcaagca 120
ctcgtggacg tcgtgggaga cgagagcctc tcctacaaag aatttttcga agctactgtg 180
ctgttgggcc aaagcctcca taattgtggg tacaaaatga acgatgtggg gagcatttgt 240
gctgagaata acactcgctt ctttattcct gtaatcgctg cttggtacat cggcatgatt 300
gtcgccccctg tgaatgaatc ttacatccca gatgagctgt gtaagggttat ggggtattagc 360
aaacctcaaa tcgtctttac taccaaaaac atcttgaata aggtcttgga agtccagctc 420
cgtactaact tcatcaaacg catcattatt ctggataccg tcgaaaacat ccacggctgt 480
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ttgcattttg atccagtcga gcaagtggcc gctattttgt gctcctccgg caccactggg 600
ttgcctaaag gtgtcatgca gactcaccag aatatctgtg tgcgtttgat ccacgctctc 660
gaccctcggt tgggtactca attgatccct ggctgactgt tgcgtgtgta tctgaccttc 720
tttcacgcct ttggtttctc tattaccctg ggctatttca tggtcggctt gcgtgtcatc 780
atgtttcgtc gcttcgacca agaagccttc ttgaaggcta ttcaagacta cgaggtgcgt 840
tccgtgatca acgtcccttc agtcattttg ttcttgagca aatctccttt ggttgacaag 900
tatgatctga gcagcttgcg tgagctgtgc tgtggcgctg ctctttggc caaagaagtg 960
gccgaggtcg ctgctaagcg tctgaacctc cctggtatcc gctgcgggtt tggtttgact 1020
gagagcactt ctgctaacat ccatagcttg cgagacgagt ttaagtctgg tagcctgggt 1080
cgctgactc ctcttatggc tgcaaagatc gccgaccgtg agaccggcaa agcactgggc 1140
ccaaatcaag tcggtgaatt gtgtattaag ggccctatgg tctctaaagg ctacgtgaac 1200
aatgtggagg ccactaaaga agccattgat gatgatggct ggctccatag cggcgacttc 1260
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atccgcgacg tggccgctgt gggatatcca gacttggaag ctggcgagtt gcctagcgcc 1440
tttgtggtga aacaacccgg caaggagatc actgctaagg aggtctacga ctatttgccc 1500
gagcgctgt ctcacaccaa atatctgctg ggcgcgctcc gcttcgtcga ttctattcca 1560
cgcaacgtta ccggttaagat cactcgtaaa gagttgctga agcaactcct cgaaaaagct 1620
ggcggc 1626

<210> 298

<211> 542

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of a synthetic luciferase

<400> 298

Met Val Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
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Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
20 25 30
Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
35 40 45

004280" 90254960

Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
50						55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
	130					135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Val
	210					215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	Ser	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
				245					250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
				325					330					335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Asn	Ile	His	Ser	Leu	Arg	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395					400
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
				405					410					415	
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
				420				425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
	450					455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475					480
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
				485				490						495	
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505					510		

Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
 515 520 525
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
 530 535 540

<210> 299
 <211> 1626
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 299
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 ttgactgccg gcgaaatgct gtttcgtgct ctccgcaagc actctcattt gcctcaagcc 120
 ttggtcgatg tggtcggcga tgaatctttg agctacaagg agttttttga ggcaaccgtc 180
 ttgctggctc agtccctcca caattgtggc tacaagatga acgacgtcgt tagtatctgt 240
 gctgaaaaca ataccggttt cttcattcca gtcacgccc catggtatat cggtatgac 300
 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatatctct 360
 aagccacaga ttgtcttcac cactaagaat attctgaaca agtcctgga agtccaaagc 420
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaa ctttaaacca 540
 ctccacttcg accctgtgga acaagttgca gccattctgt gtagcagcgg tactactgga 600
 ctcccaaagg gagtcagca gaccatcaa aacatttgcg tgcgtctgat ccatgctctc 660
 gatccacgct acggcactca gctgattcct ggtgtcaccg tcttggtcta cttgcctttc 720
 ttccatgctt tcggccttca tattactttg ggttacttta tggtcgggtct ccgcgtgatt 780
 atgttcgcgc gttttgatca ggaggctttc ttgaaagcca tccaagatta tgaagtccgc 840
 agtgtcatca acgtgcctag cgtgatcctg tttttgtcta agagccact cgtggacaag 900
 tacgacttgt cttactgcg tgaattgtgt tgcggtgccg ctccactggc taaggaggtc 960
 gctgaagtgg ccgcaaaacg cttgaatctt ccagggattc gttgtggctt cggcctcacc 1020
 gaatctacca gcgtattat tcagtctctc cgcgatgagt ttaagagcgg ctctttgggc 1080
 cgtgtcactc cactcatggc tgctaagatc gctgatcgcg aaactggtaa ggctttgggc 1140
 ccgaaccaag tgggcgagct gtgtatcaa ggccctatgg tgagcaaggg ttatgtcaat 1200
 aacgttgaag ctaccaagga ggccatcgac gacgacggct ggttgcattc tggtgatttt 1260
 ggatattacg acgaagatga gcatttttac gtcgtggatc gttacaagga gctgatcaaa 1320
 tacaagggta gccaggttgc tccagctgag ttggaggaga ttctgttgaa aaatccatgc 1380
 attcgcgatg tcgctgtggt cggcattcct gatctggagg ccggcgaact gccttctgct 1440
 ttcgttgtca agcagcctgg taaagaaatt accgccaag aagtgtatga ttacctggct 1500
 gaacgtgtga gccatactaa gtacttgctg ggcggcgtgc gttttgttga ctccatccct 1560
 cgtaacgtaa caggcaaaat taccgcgaag gagctgttga aacaattgtt ggagaaggcc 1620
 ggcggt 1626

<210> 300
 <211> 542
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

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 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
 20 25 30
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
 35 40 45

004280-90254960

Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
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Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115					120					125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
		130				135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr
		210				215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
				245					250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
	290					295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
				325				330						335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Ser	Leu	Arg	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
	370					375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395					400
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
				405					410					415	
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
				420				425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
		435					440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
	450					455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475					480
Phe	Val	Val	Lys	Gln	Pro	Gly	Lys	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
				485				490						495	
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505					510		

Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
 515 520 525
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Glu Lys Ala Gly Gly
 530 535 540

<210> 301
 <211> 1626
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 301
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 ttggtcgatg tggctcggcg tgaatctttg agctacaagg agttttttga ggcaaccgtc 180
 ttgctggctc agtccctcca caattgtggc tacaagatga acgacgtcgt tagtatctgt 240
 gctgaaaaca ataccggttt cttcattcca gtcacgccc catggtatat cggtatgata 300
 gtggctccag tcaacgagag ctacattccc gacgaactgt gtaaagtcac gggatatctc 360
 aagccacaga ttgtcttcac cactaagaat attctgaaca aagtcctgga agtccaaagc 420
 cgcaccaact ttattaagcg tatcatcatc ttggacactg tggagaatat tcacggttgc 480
 gaatctttgc ctaatttcat ctctcgctat tcagacggca acatcgcaaa ctttaaacc 540
 ctccacttcg accctgtgga acaagttgca gccattctgt gtagcagcgg tactactgga 600
 ctcccaaagg gagtcatgca gacctatcaa aacatttgcg tgcgtctgat ccatgctctc 660
 gatccacgct acggcactca gctgattcct ggtgtcaccg tcttggtcta cttgcctttc 720
 ttccatgctt tcggctttca tattactttg ggttacttta tggctcgtct ccgcgtgatt 780
 atgttcgcgc gttttgatca ggaggctttc ttgaaagcca tccaagatta tgaagtccgc 840
 agtgtcatca acgtgcctag cgtgacctg tttttgtcta agagcccact cgtggacaag 900
 tacgacttgt cttcactgcg tgaattgtgt tgcggtgccg ctccactggc taaggaggtc 960
 gctgaagtgg ccgccaacag cttgaatctt ccagggattc gttgtggctt cggcctcacc 1020
 gaatctacca gtgcgattat ccagactctc ggggatgagt ttaagagcgg ctctttgggc 1080
 cgtgtcactc cactcatggc tgctaagatc gctgatcgcg aaactggtaa ggctttgggc 1140
 ccgaaccaag tgggcgagct gtgtatcaaa ggccctatgg tgagcaaggg ttatgtcaat 1200
 aacgttgaag ctaccaagga ggccatcgac gacgacggct gggtgcattc tggtgatttt 1260
 ggatattacg acgaagatga gcattttttac gtcgtggatc gttacaagga gctgatcaaa 1320
 tacaagggta gccaggttgc tccagctgag ttggaggaga ttctgttgaa aaatccatgc 1380
 attcgcgatg tcgctgtggt cggcattcct gatctggagg ccggcgaact gccttctgct 1440
 ttcgttgtca agcagcctgg tacagaaatt accgccaag aagtgtatga ttacctggct 1500
 gaacgtgtga gccatactaa gtacttgctg ggcggcgtgc gttttgttga ctccatccct 1560
 cgtaacgtaa caggcaaaat taccgcgaag gagctgttga aacaattgtt ggtgaaggcc 1620
 ggcggt 1626

<210> 302
 <211> 542
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Sequence of a synthetic luciferase

<400> 302
 Met Val Lys Arg Glu Lys Asn Val Ile Tyr Gly Pro Glu Pro Leu His
 1 5 10 15
 Pro Leu Glu Asp Leu Thr Ala Gly Glu Met Leu Phe Arg Ala Leu Arg
 20 25 30
 Lys His Ser His Leu Pro Gln Ala Leu Val Asp Val Val Gly Asp Glu
 35 40 45

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Ser	Leu	Ser	Tyr	Lys	Glu	Phe	Phe	Glu	Ala	Thr	Val	Leu	Leu	Ala	Gln
50						55					60				
Ser	Leu	His	Asn	Cys	Gly	Tyr	Lys	Met	Asn	Asp	Val	Val	Ser	Ile	Cys
65					70					75					80
Ala	Glu	Asn	Asn	Thr	Arg	Phe	Phe	Ile	Pro	Val	Ile	Ala	Ala	Trp	Tyr
				85					90					95	
Ile	Gly	Met	Ile	Val	Ala	Pro	Val	Asn	Glu	Ser	Tyr	Ile	Pro	Asp	Glu
			100					105					110		
Leu	Cys	Lys	Val	Met	Gly	Ile	Ser	Lys	Pro	Gln	Ile	Val	Phe	Thr	Thr
		115						120				125			
Lys	Asn	Ile	Leu	Asn	Lys	Val	Leu	Glu	Val	Gln	Ser	Arg	Thr	Asn	Phe
		130				135					140				
Ile	Lys	Arg	Ile	Ile	Ile	Leu	Asp	Thr	Val	Glu	Asn	Ile	His	Gly	Cys
145					150					155					160
Glu	Ser	Leu	Pro	Asn	Phe	Ile	Ser	Arg	Tyr	Ser	Asp	Gly	Asn	Ile	Ala
				165					170					175	
Asn	Phe	Lys	Pro	Leu	His	Phe	Asp	Pro	Val	Glu	Gln	Val	Ala	Ala	Ile
			180					185					190		
Leu	Cys	Ser	Ser	Gly	Thr	Thr	Gly	Leu	Pro	Lys	Gly	Val	Met	Gln	Thr
		195					200					205			
His	Gln	Asn	Ile	Cys	Val	Arg	Leu	Ile	His	Ala	Leu	Asp	Pro	Arg	Tyr
		210				215					220				
Gly	Thr	Gln	Leu	Ile	Pro	Gly	Val	Thr	Val	Leu	Val	Tyr	Leu	Pro	Phe
225					230					235					240
Phe	His	Ala	Phe	Gly	Phe	His	Ile	Thr	Leu	Gly	Tyr	Phe	Met	Val	Gly
			245						250					255	
Leu	Arg	Val	Ile	Met	Phe	Arg	Arg	Phe	Asp	Gln	Glu	Ala	Phe	Leu	Lys
			260					265					270		
Ala	Ile	Gln	Asp	Tyr	Glu	Val	Arg	Ser	Val	Ile	Asn	Val	Pro	Ser	Val
		275					280					285			
Ile	Leu	Phe	Leu	Ser	Lys	Ser	Pro	Leu	Val	Asp	Lys	Tyr	Asp	Leu	Ser
		290				295					300				
Ser	Leu	Arg	Glu	Leu	Cys	Cys	Gly	Ala	Ala	Pro	Leu	Ala	Lys	Glu	Val
305					310					315					320
Ala	Glu	Val	Ala	Ala	Lys	Arg	Leu	Asn	Leu	Pro	Gly	Ile	Arg	Cys	Gly
			325						330					335	
Phe	Gly	Leu	Thr	Glu	Ser	Thr	Ser	Ala	Ile	Ile	Gln	Thr	Leu	Gly	Asp
			340					345					350		
Glu	Phe	Lys	Ser	Gly	Ser	Leu	Gly	Arg	Val	Thr	Pro	Leu	Met	Ala	Ala
		355					360					365			
Lys	Ile	Ala	Asp	Arg	Glu	Thr	Gly	Lys	Ala	Leu	Gly	Pro	Asn	Gln	Val
		370				375					380				
Gly	Glu	Leu	Cys	Ile	Lys	Gly	Pro	Met	Val	Ser	Lys	Gly	Tyr	Val	Asn
385					390					395					400
Asn	Val	Glu	Ala	Thr	Lys	Glu	Ala	Ile	Asp	Asp	Asp	Gly	Trp	Leu	His
			405						410					415	
Ser	Gly	Asp	Phe	Gly	Tyr	Tyr	Asp	Glu	Asp	Glu	His	Phe	Tyr	Val	Val
			420					425					430		
Asp	Arg	Tyr	Lys	Glu	Leu	Ile	Lys	Tyr	Lys	Gly	Ser	Gln	Val	Ala	Pro
			435				440					445			
Ala	Glu	Leu	Glu	Glu	Ile	Leu	Leu	Lys	Asn	Pro	Cys	Ile	Arg	Asp	Val
			450			455					460				
Ala	Val	Val	Gly	Ile	Pro	Asp	Leu	Glu	Ala	Gly	Glu	Leu	Pro	Ser	Ala
465					470					475					480
Phe	Val	Val	Lys	Gln	Pro	Gly	Thr	Glu	Ile	Thr	Ala	Lys	Glu	Val	Tyr
			485						490					495	
Asp	Tyr	Leu	Ala	Glu	Arg	Val	Ser	His	Thr	Lys	Tyr	Leu	Arg	Gly	Gly
		500						505					510		

Val Arg Phe Val Asp Ser Ile Pro Arg Asn Val Thr Gly Lys Ile Thr
 515 520 525
 Arg Lys Glu Leu Leu Lys Gln Leu Leu Val Lys Ala Gly Gly
 530 535 540

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